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Abstract Having spare parts available when needed to perform required maintenance is critical to the Department of Defenses accomplishment of its missions. Shortages of spare parts are a key indicator of whether the billions of dollars annually spent on these parts are being used in an effective, efficient, and economical manner. Since 1990, we have designated the Department s management of its inventory, including spare parts, as high risk because its inventory is vulnerable to fraud, waste, and abuse.	
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Having spare parts available when needed to perform required maintenance is critical to the Department of Defense's accomplishment of its missions. Shortages of spare parts are a key indicator of whether the billions of dollars annually spent on these parts are being used in an effective, efficient, and economical manner. Since 1990, we have designated the Department 's management of its inventory, including spare parts, as high risk because its inventory is vulnerable to fraud, waste, and abuse.

The National Defense Authorization Act for Fiscal Year 2000 requires us to evaluate various aspects of the military services' logistics support capability, including the provision of spare parts.[1] Also, the Chairman, House Committee on Appropriations, and the Chairman, Subcommittee on Defense, House Committee on Appropriations, requested that we review issues related to the quality and availability of spare parts for aircraft, ships, vehicles, and weapon systems. In response to these requests, we reviewed known spare parts shortages within the services. For this report, our objectives were to determine (1) the impact of spare parts shortages on three selected Air Force systems and (2) the reasons for the shortages. Additionally, we identified the overall initiatives that the Air Force and the Defense Logistics Agency have in place or planned to address the shortages.

To address our objectives, we reviewed the Air Force's E-3 early airborne warning and control system aircraft; the C-5 transport aircraft; and the F-100-220 engine, which is used in some F-15 and F-16 fighter aircraft; we also reviewed 75 parts that were in short supply for these systems. We selected these systems because they are key to fulfilling Air Force missions. The Air Force sets goals to have a certain number of each aircraft available and capable of performing its missions at any given time. It measures the impact of parts shortages on aircraft availability by determining the percentage of aircraft that cannot meet mission requirements because parts needed for repairs are unavailable. The Air

[1] P.L. 106-65, sec. 364.

Force and the Defense Logistics Agency are responsible for managing and providing spare parts for the Air Force's aircraft.

Results in Brief

Spare parts shortages on the three systems we reviewed have adversely affected the performance of assigned missions and the economy and efficiency of maintenance activities. Specifically, the Air Force did not meet its mission-capable goals for the E-3 or C-5 during fiscal years 1996-2000, nor did it meet its goal to have enough F-100-220 engines to meet peacetime and wartime goals during that period. For example, in fiscal year 2000 the E-3s were not mission capable for supply reasons 11.3 percent of the time. In other words, 3 or 4 of the total of 32 E-3 aircraft were not available during the year. In fiscal year 2000, the C-5s were not mission capable for supply reasons 18.1 percent of the time, or almost 23 of 126 C-5s were not mission capable. Also, maintenance personnel have been required to use the inefficient practice of removing parts from one aircraft for use on another. Maintenance personnel report that this practice can require double the work since they also have to fix the aircraft that parts are removed from. Lastly, the shortages may affect personnel retention. We recently reported that one of the six factors cited by military personnel as sources of dissatisfaction and reasons to leave the military related to work circumstances such as the lack of parts and materials to successfully complete daily job requirements.

The majority of reasons cited by item managers at the maintenance facilities for spare parts shortages were most often related to more spares being required than were anticipated by the inventory management system and delays in the Air Force's repair process as a result of the consolidation of repair facilities. Other reasons included (1) difficulties with producing or repairing parts, (2) reliability of spare parts, and (3) contracting issues. For example, the anticipated quarterly demand for a machine bolt for the F-100-220 engine was 828, but actual demand turned out to be over 12,000. As a result, some F-100-220 engines were not mission capable because they were waiting for more bolts to be obtained. In another case, a contractor produced sufficient quantities of a visor seal assembly for the C-5, but the parts failed to meet design tolerances. As a result of this production problem, demands for this part could not be met.

The Air Force and the Defense Logistics Agency have numerous overall initiatives under way or planned that may alleviate shortages of the spare parts for the three aircraft systems we reviewed. The initiatives generally address the reasons we identified for the shortages. For example, the Air Force Materiel Command is developing a model to better forecast the repair facilities' demands for parts needed in the repair process. In another

overall initiative, the Command is developing a pilot program to have contractors bypass the supply system and fill the supply bins for maintenance personnel directly. This is an attempt to expedite the delivery of repair parts. To ensure that the initiatives are achieving the goals of increasing efficiencies in the supply system, the Air Force has developed a Supply Strategic Plan that contains specific goals and outcome-oriented measures for the initiatives. While the initiatives are intended to improve processes for providing spare parts, they would likely result in increased costs and larger inventories of needed spare parts.

The Air Force's plan is in keeping with our previous recommendations to improve overall logistics planning. We are, therefore, not making recommendations at this time. We will separately review the overall approach and initiatives, once they are more fully developed, to determine whether there are opportunities to enhance these efforts. The Department of Defense generally concurred with this report.

Background

In January 2001, we reported on Department of Defense management challenges and noted that the Department has had serious weaknesses in its management of logistics functions and, in particular, inventory management.[2] We have identified inventory management as a high-risk area since 1990.[3] In 1999, we reported on the Air Force's specific problems in managing spare parts and noted an increase in the percentage of some of its aircraft that were not mission capable due to supply problems.[4] (See appendix I for examples from our reports on management weaknesses related to the Air Force.) Also, the Secretary of the Air Force reported that the readiness of the Air Force has declined since 1996 and attributed this overall decline, in part, to spare parts shortages.[5] Table 1 shows the percentage of all aviation systems that were mission capable and the percentage of aircraft that were not mission capable due to supply problems from fiscal year 1996 through the first quarter of fiscal 2001.

[2] *Major Management Challenges and Program Risks: Department of Defense* (GAO-01-244, Jan. 2001).

[3] *High Risk Series: An Update* (GAO-01-263, Jan. 2001).

[4] *Air Force Supply: Management Actions Create Spare Parts Shortages and Operational Problems* (GAO/NSIAD/AIMD-99-77, Apr. 29, 1999).

[5] *Annual Report to the President and the Congress,* part VI: Statutory Reports, Secretary of the Air Force.

Table 1: Reported Rates for Aircraft That Were Mission Capable and Not Mission Capable Due to Supply Problems

In percent

Fiscal year	Aircraft reported as mission capable	Aircraft reported as not mission capable due to supply problems
1996	78.5	11.0
1997	76.6	12.6
1998	74.3	13.9
1999	73.5	14.0
2000	72.9	14.3
2001 (1st quarter)	72.9	14.0

Source: The Air Force's Multi-Echelon Requirements and Logistics Information Network.

As table 1 shows, the percentage of all Air Force systems reported as not mission capable due to supply problems steadily increased from fiscal year 1996 through fiscal year 2000. The Air Force requested additional funding to address concerns with spare parts shortages. The Air Force states in the *Department of Defense Quarterly Readiness Report to the Congress*[6] for July through September 2000 that funding Congress provided in earlier years has begun to improve the availability of spares, citing a 58-percent reduction in parts that have been ordered but not received since December 1998. The Secretary also expressed cautious optimism that recent congressional funding would improve the availability of spare parts and aircraft mission-capable rates. In the most recent quarterly readiness report (Oct. through Dec. 2000), the Air Force cautions that although as of early December 2000 overall mission-capable rates had improved from average fiscal year 2000 rates, this improvement had come at the cost of the increased use of the practice of removing parts from one aircraft for use on another, that is, cannibalization.[7]

Because of concerns that spare parts shortages were causing readiness problems, the Air Force received in fiscal 1999 an additional $904 million in obligation authority from the Department of Defense to buy more spare

[6] *Department of Defense Quarterly Readiness Report to the Congress* is a review of individual service and joint readiness on a quarterly basis and is submitted to Congress by the Secretary of Defense no later that 45 days after the end of each quarter.

[7] We are separately reviewing this issue and will report the results later this year to the Chairman, Subcommittee on National Security, Veterans Affairs, and International Relations, House Committee on Government Reform.

parts. This amount consisted of $387 million to buy spare parts attributable to the Kosovo operation, $135 million to buy engine-related spare parts for the Oklahoma City Air Logistics Center, and $382 million to overcome the accumulated shortfall of spare parts inventories. Also in 1999, the Department of Defense announced plans to provide $500 million to the Defense Logistics Agency to purchase spare parts for all the services over fiscal years 2001-2004. Of that $500 million, $213.8 million is to be for parts to be used on Air Force aircraft. According to a Department of Defense official, the Air Force was provided the first $50 million in fiscal 2001 to pass on to the Defense Logistics Agency to pay for Air Force parts ordered in fiscal year 2000. The Air Force and the other military services received additional funds in fiscal year 1999 that, unlike the funds cited above, were placed largely in operations and maintenance accounts. In a separate report issued earlier this year, we indicated current financial information did not show the extent to which these funds were used for spare parts.[8] However, the Department plans to annually develop detailed financial management information on spare parts funding uses but does not plan to provide it to Congress. We, therefore, recommended to the Secretary of Defense that the information to be developed annually by the Department and the services on the quantity and funding of spare parts be routinely provided to Congress as an integral part of the Department's annual budget justification; the Department agreed to do so.

The aviation systems that we reviewed are vital to the Air Force achieving its missions. The E-3 provides surveillance of the airspace and manages the flight of all aircraft in an assigned battlefield area. The Air Force first received E-3s in 1977, and an Air Force official told us that it is the oldest aircraft in the Air Force in terms of operational hours flown. The C-5 is the Air Force's largest cargo aircraft, carrying cargo such as Army tanks, and is one of the largest aircraft in the world. About 70 percent of the oversized cargo required in the critical first 30 days of one major war scenario would be the type of cargo the C-5 carries. The Air Force first received operational C-5 aircraft in 1970, and according to Air Force officials, one of the reasons for the lower than expected mission-capable rates in recent years for the C-5 aircraft is its age. The F-100-220 engine powers many of the Air Force's F-15 and F-16 fighter aircraft and, according to an Air Force official, will become increasingly critical to operations as some older engines are replaced with the F-100-220. For

[8] *Defense Inventory: Information on the Use of Spare Parts Funding Should Be Provided to Congress* (GAO-01-472, Apr. 2001).

each of these systems, we judgmentally selected for review 25 parts, a total of 75, with the highest number of hours or incidents of unavailability for given time periods.

Figure 1: E-3, C-5, F-15, and F-16 Aircraft

C-5 aircraft

F-15 with F-100-220 engine

E-3 aircraft

F-16 with F-100-220 engine

Source: www.af.mil\gallery.

Air Force spare parts are classified as either consumables or reparables. Consumable items, which are mostly managed by the Defense Logistics

Agency, are those items that are discarded when they fail because they cannot be cost-effectively repaired. The Defense Supply Center Richmond is the lead center for managing aviation consumable spare parts. Reparable items, managed by the Air Force Materiel Command, are items that can be cost-effectively repaired. The Command's mission is to research, develop, test, acquire, deliver, and logistically support Air Force weapon systems.

Spare Parts Shortages Adversely Affect Mission Performance, Economy and Efficiency of Operations, and Retention of Military Personnel

The shortages of spare parts for the three aircraft systems we reviewed have not only affected readiness but also have created inefficiencies in maintenance processes and procedures and may adversely affect the retention of military personnel. Two aircraft we reviewed, the E-3 and C-5, did not meet their mission-capable goals in fiscal years 1996-2000 and were not mission capable due to supply problems from 7.3 percent to 18.1 percent during the same period. The number of usable spare F-100-220 engines that the Air Force had on hand fell short of its goal by as few as 6 and as many as 104 engines during the same period.

Spare Parts Shortages Contributed to Three Systems' Failure to Meet Mission Performance Goals

The Air Force did not achieve its mission-capable goals during fiscal years 1996-2000 for any of the three Air Force aircraft systems we reviewed, in part, due to spare parts shortages. Table 2 shows the mission-capable goals and actual rates for the E-3 aircraft for fiscal years 1996-2000, and table 3 shows the rates at which the E-3 was not mission capable due to supply problems during the same period.

Table 2: Reported Mission-Capable Goals and Rates for the E-3

In percent

Fiscal year	Mission-capable goal	Reported mission-capable rate	Difference
1996	85	82.5	(2.5)
1997	85	79.2	(5.8)
1998	85	71.9	(13.1)
1999	85	73.5	(11.5)
2000	73	72.8	(0.2)

Source: The Air Force's Multi-Echelon Requirements and Logistics Information Network.

The goal for the E-3 was lowered to 73 percent from March through September 2000 based on an Air Force assessment of its ability to achieve its mission-capable goal. The Air Force recognized that it had failed to

achieve historical performance levels to the point that falling short of the standard had become the norm. Citing constraints regarding spare parts, maintenance personnel, and repair equipment, the Air Force lowered mission-capable goals for the E-3 and other aircraft with the intent of providing maintenance personnel with more achievable targets. The mission-capable goal for the E-3 aircraft rose to 81 percent in fiscal year 2001, and it is planned to return to 85 percent in fiscal year 2002.

Table 3: Reported Goals and Rates at Which E-3 Aircraft Were Not Mission Capable Due to Supply Problems

In percent

	Total not mission capable due to supply problems		
Fiscal year	**Goal**	**Reported rate**	**Difference**
1996	6 or less	7.3	(1.3)
1997	6 or less	9.4	(3.4)
1998	6 or less	12.9	(6.9)
1999	6 or less	11.9	(5.9)
2000	12 or less	11.3	0.7

Source: The Air Force's Multi-Echelon Requirements and Logistics Information Network.

The goal was 12 percent or less from March through September 2000 and was raised based on an Air Force assessment of the aircraft's ability to achieve the not mission capable due to supply problems goal for the E-3 and other aircraft. The Air Force recognized that it had failed to achieve historical performance levels to the point that falling short of the standard had become the norm. Citing constraints regarding spare parts, maintenance personnel, and repair equipment, the Air Force raised its goal for not mission capable due to supply problems for the E-3 and other aircraft with the intent of providing maintenance personnel with more achievable targets. The not mission capable due to supply problems goal changed to 8 percent in fiscal year 2001, and it is planned to return to 6 percent in fiscal year 2002.

The reported rate for total not mission capable due to supply problems in fiscal year 2000, 11.3 percent, equated to about 3 or 4 E-3s of the total of 32 aircraft being not mission capable due to supply problems.

The C-5 also did not achieve its goals during fiscal years 1996-2000. Table 4 shows the C-5's mission-capable goals and actual mission-capable rates for those years, and table 5 shows the rates at which the C-5 was not mission

capable due to supply problems as well as its goals during the same period.

Table 4: Reported Mission-Capable Goals and Rates for the C-5 Aircraft

In percent			
	Mission capable rates		
Fiscal year	Goal	Reported rate	Difference
1996	75	64.2	(10.8)
1997	75	62.7	(12.3)
1998	75	61.2	(13.8)
1999	75	59.5	(15.5)
2000	75	60.8	(14.2)

Source: The Air Force's Multi-Echelon Requirements and Logistics Information Network.

Table 5: Goals and Rates at Which the C-5 Aircraft Were Reported Not Mission Capable Due to Supply Problems

In percent			
Fiscal year	Total not mission capable due to supply problems		
	Goal	Reported rate	Difference
1996	9 or less	15.6	(6.6)
1997	8.5 or less	15.2	(6.7)
1998	8.5 or less	16.8	(8.3)
1999	8.5 or less	17.3	(8.8)
2000	8.5 or less	18.1	(9.6)

Source: The Air Force's Multi-Echelon Requirements and Logistics Information Network.

The reported rate for total not mission capable due to supply problems in fiscal year 2000, 18.1 percent, equated to almost 23 C-5s of the fleet of 126 aircraft being not mission capable, at least in part, due to supply problems.

With regard to the F-100-220 engine, the Air Force never met its goal, called the war readiness engine goal, during fiscal years 1996-2000 (see table 6). The goal can change each fiscal year for the number of usable—ready to be installed in an aircraft—spare engines the Air Force would like to have on hand to meet wartime needs. In some cases, it has had F-15s or F-16s grounded due to the lack of the engine. When the number of usable spare engines is shown as a negative number, there are not enough engines for all the aircraft required for peacetime operations; in other words, aircraft that would otherwise be available to fly are grounded

because they lack engines. During fiscal years 1996 through 2000, this occurred in five different quarters.

Table 6: F-100-220 War Readiness Engine Goal and Reported Usable Engines Available, by Quarter

Fiscal year quarter	War readiness engine goal	Usable spare engines	Difference
1996 –1	54	10	(44)
1996 –2	54	22	(34)
1996 –3	54	48	(6)
1996 –4	54	42	(12)
1997 –1	68	-5	(73)
1997 –2	68	11	(57)
1997 –3	68	17	(51)
1997 –4	68	14	(54)
1998 –1	90	-1	(91)
1998 –2	90	-13	(103)
1998 –3	90	3	(87)
1998 –4	90	17	(83)
1999 –1	90	40	(50)
1999 –2	90	41	(49)
1999 –3	90	-14	(104)
1999 –4	90	0	(90)
2000-1	84	-6	(90)
2000-2	84	16	(68)
2000-3	84	38	(46)
2000-4	84	44	(40)

Source: Oklahoma City Air Logistics Center, Department of the Air Force.

Spare Parts Shortages Can Cause Inefficient Maintenance Practices and May Hamper Efforts to Retain Maintenance Personnel

To compensate for a lack of spare parts, maintenance personnel sometimes remove usable parts from aircraft for which spare parts are unavailable to replace broken parts on others. Maintenance personnel at Seymour-Johnson Air Force Base said that this practice is necessary to attempt to maintain mission-capable rates when spare parts are not available. As we have previously reported, the result of this practice is that maintenance personnel spend a large amount of time cannibalizing parts and performing double work.[9] According to a Naval Postgraduate School thesis, there is also the potential for breaking the needed part or causing

[9] GAO/NSIAD/AIMD-99-77, Apr. 29, 1999.

collateral damage while removing the part. Additionally, a part removed from another aircraft will likely not last as long as a part from the supply system and will require maintenance sooner.

Additionally, our past work shows that spare parts shortages may affect retention. In August 1999, we reported on the results of our December 1998 through March 1999 survey of about 1,000 Army, Navy, Air Force, and Marine Corps active duty personnel that were selected based on their work in jobs in which the Department of Defense believed were experiencing retention problems. More than half of the respondents stated that they were dissatisfied and intended to leave the military. The majority of factors were associated with work circumstances such as the lack of parts and materials needed to successfully complete daily job requirements. Both officers and enlisted personnel ranked the availability of needed equipment, parts, and materials among the top 2 of 44 quality-of-life factors that caused their dissatisfaction.[10]

Shortages of Specific Spare Parts Occurred for Multiple Reasons

Spare parts shortages on the three systems we reviewed occurred for various reasons. In addition, an internal Department of Defense study found similar reasons for spare parts shortages.

Selected Systems Have Experienced Parts Shortages for Multiple Reasons

The 75 parts (25 for each system) we selected for review were recorded as being the cause for the most hours of the systems being not mission capable due to supply problems for a given time period. Specific parts were in short supply for numerous and varied reasons. Because of the interrelated nature of the supply system, some of the parts were unavailable for more than one reason. Table 7 provides a summary of the reasons for the shortages of the top 25 problem parts for each system for a given month. (See appendix II for a more detailed list of the parts discussed in this report.)

[10] *Military Personnel: Perspectives of Surveyed Service Members in Critical Specialties* (GAO/NSIAD-99-197BR, Aug. 16, 1999).

Table 7: Reasons for Shortages of 75 Spare Parts for Selected Engine and Aircraft

Reason	F-100-220[a]	E-3[b]	C-5[c]	Total
Demands were not anticipated	10	11	5	26
Changes in location of repairs	7	7	8	22
Parts production problems	3	5	10	18
Component reliability	5	2	9	16
Contracting issues	4	3	3	10
Other	3	9	0	12
Total	**32**	**37**	**35**	**104**

Note: The totals exceed 25 because some parts were unavailable for multiple reasons.

[a]The time period for the shortages was April 2000.

[b]The time period for the shortages was March 2000.

[c]The time period for the shortages was July 2000.

Source: Our analysis of Air Force Materiel Command data.

Actual Demands Were Greater Than Anticipated

Greater demand than anticipated by repair activities for the spares we reviewed was one of the most frequent reasons parts were not available. According to agency officials, the Air Force and the Defense Logistics Agency forecast the demand for parts using past data on usage of parts.[11] According to current policy, if a part had no demands over the specified period and no anticipated future demands, it may not be purchased for stock. Twenty-six (about 35 percent) of the 75 parts we reviewed were unavailable because of unanticipated demands for spare parts. For example, there had been no demand for a tension regulator for the C-5 since 1993, and it was therefore not on hand when needed through the end of July 2000. As of July 2000, C-5 aircraft had not been mission capable for a total of 155 operational days (24-hour days) due to the lack of this part. In another case, the demand calculated from past experience for a machine bolt for the F-100-220 engine was far less than the demand by the end of April 2000. In that case, the average quarterly demand for the bolt was 828 but increased to over 12,000 in one quarter. The item manager did not know the specific reasons for this increase in demand. At the end of April 2000, in 96 cases the lack of this bolt rendered F-100-220 engines not mission capable. Also, in the case of a metallic seal for the engine, demand increased after responsibility for the repair of the seal was transferred from a closing repair facility. Parts managers speculated that workers at

[11] When establishing initial spares for new weapon systems, the Air Force uses, in part, engineering estimates to determine the quantities of spare parts to purchase.

the new repair facility were replacing this item more often than at the previous repair facility as a part of their routine maintenance efforts. As a result of the lack of this seal, F-100-220 engines were not mission capable in 11 cases by the end of April 2000.

Changes in Location of Repairs

Twenty-two (about 29 percent) of the parts reviewed were on back orders because of difficulties related to the transfer of workload from two maintenance facilities that were closing. As a result of the Base Realignment and Closure Commission's 1995 recommendations, the Air Force consolidated its air logistics centers, or maintenance repair facilities, from five to three locations and increased its use of contractor repair capability. Air Force data indicated that back orders for critical parts affected by the consolidation peaked at about 615,000 in December 1998 before falling to 374,000 by the end of fiscal 1999 and to just over 258,000 by December 2000, a 58-percent reduction. The Department of Defense cited underestimated workloads in several key shops at the remaining three air logistics centers as the primary reason for the increase in back orders.

For one part we reviewed, a blade lock retainer for an F-100-220 engine, a closing air logistics center had repaired the part on a special, as-needed basis and did not record demands for repair. When responsibility for repair of the part was transferred to the Oklahoma City Air Logistics Center, the Center had no demand data for the part and had not ordered replacement retainers, and no retainers were on hand to install on engines as needed. As a result of the lack of this blade lock retainer, F-100-220 engines were not mission capable in 22 instances by the end of April 2000. Also, the receiving air logistic centers did not have some of their repair shops ready as planned when items were to be transferred. For example, a hydraulic valve for the E-3 was unavailable because the receiving air logistics center did not have a required test stand repaired and certified in time to prevent this part from being available when needed. Because of the lack of this part, by the end of March 2000, E-3 aircraft had accumulated a total of about 8 operational days of time not mission capable.

Parts Production Problems

Production problems were at least partially the cause of the unavailability of 18 (24 percent) of the spare parts reviewed. Several examples follow.

- The sole-source contractor for a C-5 part could not deliver as many aircraft turbines as the Air Force needed in the time specified in the contract. As of July 2000, due to the lack of the turbine, C-5s had accumulated about 335 days of not mission capable time.

- Although a contractor produced sufficient quantities of the visor seal assembly for the C-5, the parts failed to meet design tolerances. As a result, C-5s had accumulated the equivalent of 186 operational days of not mission capable status by the end of July 2000.

- Most of the dual ignition exciters for the F-100-220 engine that a contractor produced failed quality inspections, and the contractor therefore could not provide a quantity sufficient to satisfy Air Force demands. By the end of April 2000, the lack of dual ignition exciters had caused F-100-220 engines to be not mission capable in 104 cases.

- A contractor agreed to increase production of an augmentor nozzle for the F-100-220 engine to meet the demand created by the Kosovo air campaign. The contractor scaled back production after the campaign was over. According to an Air Force official, this was within the terms of the contract, which called for an average number of parts per month. However, overall demand for this part exceeded supply. By the end of April 2000, the lack of the nozzle had caused F-100-220 engines to be not mission capable in 63 cases.

- At an Air Force repair facility, spares of an augmentor fuel control for the F-100-220 engine were mistakenly disposed of instead of being turned in for repair, and the controls had to be bought on an emergency basis to make repairs. Through April 2000, having to purchase this item on an emergency buy resulted in 30 incidents of F-100-220 engines being classified not mission capable.

Component Reliability

Sixteen (about 21 percent) of the parts that we reviewed were unavailable because the life of parts was shorter than the Air Force had predicted. Thus, the parts in stock were exhausted before the Air Force could replace them. For example, a skid detector for the C-5 aircraft experienced a 50-percent increase in failures, and all the spare parts were used before the item could be ordered and restocked. Through July 2000, C-5 aircraft were not mission capable for over 368 operational days due to the lack of this part. Some reliability problems raised safety concerns and created new, and higher, requirements for the part. For example, when a nozzle in the augmentor duct on some F-100-220 engines began to fall off due to cracks at the rivet head, the Air Force began to replace the duct routinely as each aircraft came in for maintenance. By the end of April 2000, the lack of this part had resulted in F-100-220 engines not being mission capable in 34 cases.

Contracting Issues

Both the Air Force and the Defense Logistics Agency have encountered a variety of problems in contracting for spare parts needed for repairs. Ten (about 13 percent) of the parts we reviewed were unavailable, at least in part, because of contracting issues. These issues included lengthy price negotiations, a contract requirement to have a minimum number of units before beginning repairs, failure of a contractor to meet the delivery date, and termination of a contract. For example, the Defense Logistics Agency did not have a straight pin for the F-100-220 engine in stock because the sole-source company wanted a price that the Agency was unwilling to pay. This resulted in extended negotiations with the company before an award could be made. By the end of April 2000, the lack of this part had caused F-100-220 engines to be not mission capable in nine cases. In another case, to obtain an acceptable price for a contract for the repair of a temperature indicator for the E-3 aircraft, the Air Force was required to provide a minimum of 10 regulators for repair. By the time 10 units were accumulated and shipped, the demand for the part had exceeded the supply. Through March 2000, E-3 aircraft were not mission capable over 19 operational days due to the lack of this part. Also, a contract for an axle beam fitting for the C-5 aircraft had to be terminated because the contractor requested too many delivery schedule extensions. As of July 2000, the equivalent of one C-5 aircraft was not mission capable for 124 operational days.

Other Reasons

Twelve (16 percent) of the parts we reviewed were unavailable for reasons other than those we have already cited. In one case, the Air Force used an incorrect replacement rate for an engine core, and as a result, the repair of parts was not timely. Through April 2000, F-100-220 engines were not mission capable due to the lack of this part in 33 cases. Also, the limited repair facility capacity for certain spare parts, such as electric generators, created shortages of the parts. By the end of March 2000, E-3 aircraft had been not mission capable for almost 10 operational days due to the lack of this part. In another case, because maintenance facilities prioritize repairs based on current Air Force requirements, a receiver transmitter was not repaired in time to avoid a shortage because higher priority items had to be repaired first. As a result, over 15 operational days of not mission capable time had been accumulated on E-3s by the end of March 2000. In another case, the required part, a vaneaxial fan, was on hand, but E-3 aircraft had accumulated over 15 operational days of not mission capable time by the end of March 2000 because of the time it took to ship the part overseas. In some cases, no spare parts had been purchased when an aircraft was being modified or the technical data for the modification was incomplete. At the end of March 2000, over 10 operational days of not

mission capable time had accumulated for E-3 aircraft due to the lack of a control indicator that fell into this category.

Department of Defense Internal Study Found Similar Reasons for Shortages

An internal study conducted by the Department of Defense found similar reasons for Air Force reparable spare parts shortages.[12] The study examined parts causing aircraft to be not mission capable and found that there were two reasons for the shortages. The first reason was an insufficient inventory of certain reparable parts. The second was that although there were enough parts in the system, other constraints prevented a repair facility from repairing the parts in a timely manner. The study states that this may have happened for several reasons. The parts may not have been returned from units to the repair facility, a repair facility may have lacked capacity in certain key areas such as manpower or testing equipment, the consumable parts required to fix the reparable item may not have been available, or the item managers may not have requested the repair facility to repair a part because of a lack of funding.[13] The study contained a recommendation that the Air Force provide $609 million for fiscal years 2002 to 2007 to improve the availability of reparable spare parts. According to a Department of Defense official, the Air Force plans to provide the funds.

Overall Initiatives Exist to Address Problems

The Air Force and the Defense Logistics Agency have overall initiatives under way or planned to improve the availability of spare parts. The initiatives are intended to improve the efficiency of the supply system and increase the requirements for spare parts. The initiatives generally address the specific reasons for shortages identified by our review, with the exception of changes in the location of repairs that is not a recurring problem. The Air Force has developed a Supply Strategic Plan that includes a management framework and specific goals and outcome-oriented measures for its initiatives. We have made various recommendations to address this issue. The Air Force has actions under way to respond to address these recommendations; therefore, we are not

[12] Office of the Secretary of Defense, Program Analysis and Evaluation, *Aviation Spare Parts Inventory Funding for Readiness,* Feb. 2001.

[13] We also found in our 1997 study that even though military units had funds to purchase spare parts, the supply group did not always have sufficient funds to buy new parts or pay for the repair of broken parts that customers needed. See *Air Force Supply: Management Actions Create Spare Parts Shortages and Operational Problems* (GAO/NSIAD/AIMD-99-77, Apr. 29, 1999).

making any additional recommendations at this time. We will be reviewing the strategic plan's initiatives, once they are more developed, to evaluate their likely effectiveness and to assess whether additional initiatives are needed.

Air Force Supply Strategic Plan

The Air Force is regularly monitoring which spare parts are unavailable for the longest period of time and undertakes ad hoc actions to resolve the problems causing the shortage. In 1999, the Air Force developed the Supply Strategic Plan to help create an integrated process for supply planning, to facilitate the exchange of information throughout the supply system, and to improve measures of effectiveness for the supply system. The plan, which was updated in January 2001, establishes five goals for the Air Force supply community to achieve by 2010.

Supply Strategic Plan Goals

Manage assets effectively
Organize, train, and equip supply personnel
Support Department of Defense operations
Establish and implement fuel policy
Implement effective financial management

Each goal has associated objectives to be achieved in the next 4 to 7 years and tasks to be completed in the next 1 to 4 years.

Objectives to Support Supply Strategic Plan

In support of the Supply Strategic Plan, the Air Force Deputy Chief of Staff, Installations and Logistics, Directorate of Supply,[14] established in 1999 the Supply Foundation Project, which includes 10 objectives with associated initiatives for each. The Directorate views the project as a comprehensive means of improving the supply system. The first objective is to improve spare parts management. The intent is to determine the baseline for formulating a spare parts policy; to determine the overall trend for spare parts, that is, are shortages increasing or decreasing; and to develop and implement initiatives to reduce the shortages of spare parts.

Within the objective of improving spare parts management, the Directorate has initiatives within the goal of managing assets under way or under study.

Initiatives for Managing Assets

Improve the process for determining requirements for spare parts

Improve the process for funding the parts

Increase the stock of certain parts

Increase the parts contained in readiness spares packages (deployment kits for maintaining aircraft)

Coordinate with the Defense Logistics Agency to ensure that it buys the most critically needed parts from the Air Force portion of the $500 million provided by the Department of Defense for fiscal years 2001 to 2004

Reduce the time that customers wait for parts

For each of these initiatives, the Air Force has established short-term and

[14] The Air Force Directorate of Supply establishes and implements Air Force supply and fuel policy. The Directorate also prepares, executes, and manages budget programs totaling over $17 billion annually for Air Force aircraft, missiles, munitions, communications, and vehicles.

long-term milestones and accountability for implementation by assigning program responsibility to specific offices and individuals. The measures for success include achieving goals such as (1) increasing the issuance of parts when requested, (2) increasing the stock of certain parts, (3) improving total rates for aircraft not mission capable for supply reasons, and (4) lowering cannibalization rates. (See appendix IV for a complete listing of these Air Force initiatives.)

Air Force Materiel Command Initiatives

In addition to the initiatives contained in the Air Force Supply Strategic Plan, the Air Force Materiel Command also has actions under way and planned to separately address more specific aspects of spare parts management and policies. According to Air Force officials, these actions are being coordinated with the Air Force Deputy Chief of Staff, Installations and Logistics, Directorate of Supply. As part of its Constraints Analysis Program, the Air Force Materiel Command identified six major problems that had prevented it from providing timely support to the warfighter. These problems were unavailability of consumable parts; unreliability of parts; poor management of the suppliers of parts; inadequate workload planning; ineffective inventory management; and inefficient policies regarding which parts are repaired and, if repair is needed, where the repairs should be made. The Command focused its initial efforts on studying ways to resolve the problems with supplier management, parts reliability, and unavailability of consumable parts. Implementation plans are being developed for actions for each of these problems while the remaining problems are being studied. The Command is also developing (1) a model to forecast the repair facilities' demands for consumable spare parts and electronically transmit this data to the Defense Logistics Agency and (2) a pilot program to have contractors bypass the supply system and fill the supply bins for maintenance personnel directly.

Defense Logistics Agency Initiatives

Among the efforts the Defense Logistics Agency has under way to improve the availability of spare parts are its Aviation Investment Strategy and Aging Aircraft Program.

Aviation Investment Strategy

The Defense Logistics Agency's major initiative to resolve aircraft spare parts shortages is its Aviation Investment Strategy. This fiscal year 2000 initiative focuses on replenishing consumable aviation repair parts with identified availability problems that affect readiness. Of the $500 million that the Defense Department budgeted for this purpose, $213.8 million was the Air Force portion. As of December 2000, $95.3 million had been targeted for Air Force spare parts and $22.3 million worth of parts had been delivered.

Aging Aircraft Program

The goal of the Defense Logistics Agency's Aging Aircraft Program is to consistently meet the goals for spare parts availability for the Army, Navy, and Air Force aviation weapon systems. The program's focus will be to (1) provide inventory control point personnel with complete, timely, and accurate information on current and projected parts requirements; (2) reduce customers' wait times for parts for which sources or production capabilities no longer exist; and (3) create an efficient and effective program management structure and processes that will achieve the stated program goals. The Agency plans to spend about $20 million during fiscal years 2001-2007 on this program.

Air Force Has Responded to Our Recommendations for Better Planning

We recommended in November 1999 that the Secretary of the Air Force develop a management framework for implementing best practice initiatives based on the principles embodied in the Government Performance and Results Act. The Department of Defense concurred with our recommendation and stated that the Air Force is revising its Logistics Support Plan to more clearly articulate the relationships, goals, objectives, and metrics of logistics initiatives.[15] As a part of the Supply Strategic Plan, the Air Force included initiatives intended to improve the availability of spare parts.

We also recommended in January 2001 that the Department develop an overarching plan that integrates the individual service and defense agency logistics reengineering plans to include an investment strategy for funding reengineering initiatives and details on how the Department plans to achieve its final logistics system end state.[16]

Since the Air Force and the Department of Defense are taking actions on our previous recommendations to improve overall logistics planning, we are not making new recommendations at this time.

Agency Comments

The Acting Deputy Under Secretary of Defense for Logistics and Materiel Readiness, in commenting on a draft of this report, indicated that the Department of Defense generally concurred with the report. The Department's comments are reprinted in their entirety in appendix V.

[15] *Defense Inventory: Improved Management Framework Needed to Guide Air Force Best Practice Initiatives* (GAO/NSIAD-00-2, Nov. 18, 1999).

[16] GAO-01-244, Jan. 2001 and GAO-01-263, Jan. 2001.

Scope and Methodology

To determine the impact of the shortages of spare parts, we reviewed data on the Air Force's mission-capable goals and actual rates and goals and actual rates for aircraft not mission capable due to supply problems for selected months from the Office of the Secretary of the Air Force, Installations and Logistics Directorate. We did not independently verify these data. From these data, we selected three systems for review that had experienced difficulties in achieving mission-capable goals or in the case of the F-100-220 engine readiness goals for the number of usable engines on hand. We also reviewed data on cannibalizations provided by the Air Combat Command, Hampton, Virginia; the Office of the Secretary of the Air Force, Installations and Logistics Directorate, Washington, D.C.; and Seymour-Johnson Air Force Base, Goldsboro, North Carolina. Using the data, we discussed with maintenance personnel the impact of cannibalizations on spare parts shortages. We also used data from studies conducted by the Department of Defense regarding spare parts shortages and their impacts. Lastly, we drew relevant information from our recently issued reports.

To determine the reasons for these part shortages, we visited the air logistics centers at Tinker Air Force Base (E-3), Oklahoma City, Oklahoma; Warner-Robins Air Force Base (C-5), Robins, Georgia; Kelly Air Force Base (F-100-220 aircraft engine), San Antonio, Texas; and the Defense Supply Center Richmond, Richmond, Virginia. To identify specific reasons, we discussed the specific parts shortages with those who manage these items at these locations. We also reviewed our related work on Air Force and Department of Defense inventory management practices to identify systemic management problems that are contributing to spare parts shortage.

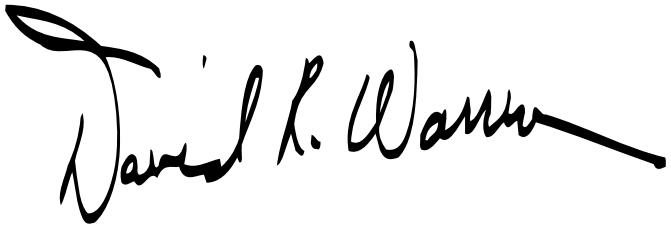
To determine what overall actions are planned or under way to address overall spare parts shortages for Air Force aircraft and the management framework for implementing the overall initiatives, we visited the Air Force headquarters, the Joint Chiefs of Staff Logistics Directorate, and the Office of the Secretary of Defense, located in the Washington, D.C. area; the Defense Logistics Agency located at Fort Belvoir, Virginia, and the Defense Supply Center located in Richmond, Virginia; the Air Force Materiel Command, Dayton, Ohio; and the air logistics centers at Tinker Air Force Base, Oklahoma (E-3), Warner-Robins Air Force Base, Georgia (C-5), and Kelly Air Force Base, Texas (F-100-220). We discussed with officials at each of these locations Air Force initiatives regarding spare parts, their progress and results to date, the planned completion dates for some initiatives, and additional steps needed to address spare parts shortages. We also compared the reasons for the shortages we found with

the overall initiatives under way or planned to determine if there were any areas that were not being addressed. We did not review these plans or the specific initiatives.

Our review was performed from February 2000 to April 2001 in accordance with generally accepted government auditing standards.

We are sending copies of this report to the Secretary of Defense; the Secretary of the Air Force; the Director, Office of Management and Budget; and the Director, Defense Logistics Agency. We will also make copies available to others upon request.

Please contact me at (202) 512-8412 if you or your staff have any questions regarding this report. Key contributors to this report were Lawson Gist Jr., John Beauchamp, Willie Cheely Jr., and Nancy Ragsdale.



David R. Warren
Director
Defense Capabilities and Management

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Appendix I: Management Weaknesses Have Contributed to Spare Parts Shortages

Our high-risk reports over the past several years have noted that Department of Defense inventory and financial management weaknesses have contributed to parts not being available when needed.[1]

In January 2001, we reported on Department of Defense management challenges and noted it has had serious weaknesses in its management of logistics functions and, in particular, inventory management.[2] Although not specifically identified with the systems we reviewed, these management weaknesses directly or indirectly contribute to the shortages of spare parts the Air Force is facing, as the following examples show.

- We reported in January 2001 that nearly half of the Department's inventory exceeded war reserve or current operating requirements and that the Department had inventory on order that would not have been ordered based on current requirements. [3] Purchasing items that exceed requirements use funds that could be used to purchase needed parts.

- We reported in April 1999 that because the Air Force had reduced the supply activity group's budget by $948 million between fiscal year 1997 and 1999 to reflect efficiency goals and because these goals were not achieved, fewer items than projected were available for sale to customers. As a result, military units had funds to purchase spare parts, but the supply group did not always have sufficient funds to buy new spare parts or pay for repair of broken parts that customers needed.[4]

- We also reported that because of poor management practices, over $2 billion worth of spare parts in the Air Force's "suspended inventory category," which cannot be issued because of questionable condition, was not reviewed for years. [5] As a result, the Air Force is vulnerable to incurring unnecessary repair and storage costs and reducing its readiness. Better management of these parts could increase the number of spare parts available.

[1] *Major Management Challenges and Program Risks: Department of Defense* (GAO-01-244, Jan. 2001) and *High Risk Series: An Update* (GAO/HR-01-263, Jan. 2001).

[2] GAO-01-244, Jan. 2001.

[3] GAO-01-244, Jan. 2001.

[4] *Management Actions Create Spare Parts Shortages and Operational Problems* (GAO/NSIAD/AIMD-99-77, Apr. 29, 1999)

[5] *Defense Inventory: Inadequate Controls Over Air Force Suspended Stocks* (NSIAD-98-29, Dec. 22, 1997).

In addition, the Department of Defense's long-standing financial management problems may also contribute to the Air Force's spare parts shortages. As we recently reported, existing weaknesses in inventory accountability information can affect supply responsiveness.[6] Lacking reliable information, the Department of Defense has little assurance that all items purchased are received and properly recorded. The weaknesses increase the risk that responsible inventory item managers may request funds to obtain additional, unnecessary items that may be on hand but not reported.

[6] GAO-01-244, Jan. 2001.

Appendix II: E-3, C-5, and F-100-220 Engine Parts and Part Function

Spare part	Part function
C-5 tension regulator	Cable tension regulator that tightens or loosens the tension on cables
F-100-220 machine bolt	Retains augmentor nozzle on the augmentor duct
F-100-220 metallic seal	Retains number one bearing in place on the inlet fan case
F-100-220 blade lock retainer	Retains third stage blades to the rotor
E-3 hydraulic valve	Opens the inlet and outlet valve for the auxiliary power unit
C-5 aircraft turbine	Provides air for heat and cooling plus aircraft pressure
C-5 visor seal assembly	Keeps moisture out and ensures a secure fit
F-100-220 dual ignition exciter	Sends message to start engine and when afterburner is needed
F-100-220 augmentor nozzles	Provides aviation fuel to combustion chamber
F-100-220 augmentor fuel control	Supplies fuel into the segment, core, and duct systems
C-5 skid detector	Sends wheel speed to main computer
F-100-220 augmentor duct	Houses augmentor section of engine
F-100-220 engine core	Compresses air in the engine
E-3 generator	Provides electrical power to the aircraft
E-3 receiver transmitter	Provides altitude data and trip signals to crew
E-3 vaneaxial fan	Supplies air to the crew compartment
E-3 control indicator	Provides means of controlling the frequency of the flight deck radio equipment
F-100-220 straight pin	Secures the short links to the augmentor nozzle convergent segments, which opens and closes the nozzle
E-3 temperature indicator	Reads temperature of integrated drive generator
C-5 axle beam	Bushing for the landing gear to control turning the aircraft

Source: Air Force.

Appendix III: Spare Parts Reviewed and Reasons for Shortage

Spare part	Reason for shortage
E-3 aircraft	
Rotodome door actuator	Parts production problem, contracting issue
Floating deck pulser	Changes in location of repair
High voltage regulator	Changes in location of repair
Low chain klystron power amplifier	Component reliability
Door	Actual demands were greater than anticipated and parts production problem
Aircraft door	Actual demands were greater than anticipated
Landing gear door	Actual demands were greater than anticipated and other—repair facility capacity/priority and incomplete technical order
Waveguide coupler	Parts production problem and component reliability
Central processing	Other-repair facility capacity/priority and test equipment software problem
Nitrogen fill valve	Actual demands were greater than anticipated
Temp indicator	Parts production problems and contracting issues
Regulator, oxygen	Changes in location of repairs, actual demands were greater than anticipated, and parts production problems
Connecting link, rig	Actual demands were greater than anticipated
Vaneaxial fan	Other—shipping time
Receiver transmitter	Actual demands were greater than anticipated and other—repair facility capacity/priority
Regulator, current	Actual demands were greater than anticipated
Auxiliary power supply	Changes in location of repairs
Gas turbine engine	Other – shipping time
Control indicator	Other—no spares purchased for modifications
Generator	Changes in location of repairs and other—repair facility capacity/priority
Interface unit	Contracting issues and other—incomplete technical data for modification
Voltage regulator	Changes in location of repairs and actual demands exceeded anticipated
Circuit card assembly	Actual demands were greater than anticipated
Regulator	Actual demands were greater than anticipated and other—suitable substitute not linked to master
Hydraulic valve	Changes in location of repairs
Spare part	Reason for shortage
C-5 aircraft	
Hydraulic servo valve	Component reliability
Skid detector	Component reliability
Aircraft turbine	Parts production problem
Cylinder assembly[a]	Changes in location of repairs
Manifold assembly[a]	Changes in location of repairs and parts production problems
Track assembly	Actual demands were greater than anticipated
Manifold assembly[a]	Changes in location of repairs and parts production problems
Visor seal assembly	Contracting issue and parts production problem
Direction slide	Actual demands were greater than anticipated
Manifold assembly[a]	Component reliability
Variable feel unit	Changes in location of repairs
Tension regulator	Actual demands were greater than anticipated
Temperature transmitter	Actual demands were greater than anticipated and parts production problems
Test adapter	Component reliability

Spare part	Reason for shortage
Linear valve[a]	Component reliability and parts production problem
Cylinder assembly[a]	Changes in location of repairs
Electric actuator	Changes in location of repairs and component reliability
Axle beam fitting	Component reliability, contracting issue, and parts production problem
Manifold assembly[a]	Changes in location of repairs and parts production problem
Hydraulic cartridge	Actual demands were greater than anticipated
Linear valve[a]	Component reliability and parts production problems
Cylinder assembly[a]	Changes in location of repairs
Alarm-monitor	Contracting issues
Linear valve[a]	Component reliability
Flush valve	Parts production problem
F-100-220 engine	
Ignition weight	Parts production problem
Machine bolt[a]	Actual demands were greater than anticipated
Machine bolt[a]	Actual demands were greater than anticipated
Fan	Contracting issue and parts production problem
Spare part	Reason for shortage
Augmentor nozzle[a]	Contracting issue
Augmentor nozzle[a]	Contracting issue
Lower pressure turbine	Actual demands were greater than anticipated and parts production problem
Divergent seal	Actual demands were greater than anticipated
Static probe	Actual demands were greater than anticipated
Jet engine fuel pump	Actual demands were greater than anticipated
Augmentor duct	Component reliability
Plate spacer	Component reliability
220 core	Component reliability and other—information system problem
Sleeve spacer	Actual demands were greater than anticipated
Fuel control[a]	Changes in location of repairs
220e core	Component reliability and other—information system problem
Fuel control[a]	Changes in location of repairs
Blade lock retainer	Changes in location of repairs and other—information system problem
Transmitter	Component reliability
Tube assembly[a]	Changes in location of repairs and demands were not anticipated
Bearing unit	Actual demands were greater than anticipated
Tube assembly[a]	Changes in location of repairs and demands were not anticipated
Metallic seal	Changes in location of repairs
Turbine rotor	Changes in location of repairs
Straight pin	Contracting issue

[a]The spare parts with the same name have different stock numbers.

Source: Air Force.

Appendix IV: Air Force Deputy Chief of Staff, Installations and Logistics, Directorate of Supply, Spare Parts Initiatives

Initiative	Objective	Estimated completion date
Implement spares requirements review board	Identify total spares requirement	May 31, 2002
Use "total cost of goods" vs. "total cost of goods sold" in budget estimates	Enhance cost recovery for Working Capital Fund	Dec. 31, 2002
Change point-of-sale policy	Enhance Working Capital Fund cost recovery	Feb. 28, 2002
Use actual pipeline times instead of goals in requirements computation	Increase spares availability	Oct. 31, 2001
Enhance process for determining aircraft goals	Increase safety levels of spare parts	Dec. 31, 2001
Review retention policy	Improve low/variable usage spares support by retaining more parts longer	Oct. 11, 2002
Change consumable parts reorder point policy	Improve mission capability by lowering the reorder point for consumables	May 31, 2001
Change policy to reduce base-level excess instances of "awaiting parts"	Make more serviceable assets available by reducing the credit a base will receive for turning in excess parts	Sept. 28, 2001
Expand use of air logistics centers' EXPRESS prioritization system	Improve repair and distribution decisions for spares by including more parts in the EXPRESS prioritization system	Nov. 30, 2001
Align annual readiness spares packages review cycle and budget cycle	Recognize readiness spares packages requirements in budget	Oct. 31, 2002
Field fighter readiness spares packages updates	Increase range/depth of fighter readiness spares packages for aerospace expeditionary force operations	Nov. 9, 2001
Field strategic airlift and C-130 readiness spares packages	Recompute strategic lift/C-130 readiness spares packages	Nov. 9, 2001
Field high-priority contingency mission support kits	Pre-position spares for split operations and "Rainbow Unit" deployment	Reported as completed
Develop method to incorporate readiness spares packages in resource-constrained environment	Release squadron-level readiness spares packages authorizations instead of entire model design series at once	Sept. 30, 2002
Influence Defense Logistics Agency Aviation Investment Strategy	Increase Defense Logistics Agency critical item inventory	July 31, 2003
Improve pipeline times	Reduce customer wait time by more efficiently locating and shipping parts	Oct. 31, 2001
Use e-business strategies	Reduce costs and wait time using reverse auctions via Internet to improve support	Jan 4, 2002
Complete paperless contracting for spares	Achieve Department's directive on electronic procurement	Apr. 30, 2002
Implement purchasing and supply management practices	Improve performance and reduce cost of supply	June 11, 2003

Source: Air Force.

Appendix V: Comments From the Department of Defense

DEPUTY UNDER SECRETARY OF DEFENSE FOR
LOGISTICS AND MATERIEL READINESS
3500 DEFENSE PENTAGON
WASHINGTON, DC 20301-3500

JUN 7 2001

Mr. David R. Warren
Director, Defense Capabilities
and Management
National Security and International
Affairs Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Warren:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "AIR FORCE INVENTORY: Parts Shortages are Impacting Operations and Maintenance Effectiveness," dated May 11, 2001 (GAO Code 709530/OSD Case 3089). The DoD generally concurs with the draft report.

We agree with the GAO assessment that the Air Force and the DoD are taking actions on previous GAO recommendations to improve overall logistics planning, thereby obviating the need for new recommendations.

The DoD appreciates the opportunity to comment on the draft report.

Sincerely,

Allen W. Beckett
Acting

Related GAO Products

Defense Inventory: Opportunities Exist to Expand the Use of Defense Logistics Agency Best Practices (NSIAD-00-30, Jan. 26, 2000).

Air Force Depot Maintenance: Analysis of Its Financial Operations (AIMD/NSIAD-00-38, Dec. 10, 1999).

Defense Inventory: Improvements Needed to Prevent Excess Purchases by the Air Force (NSIAD-00-5, Nov. 1, 1999).

Air Force Depot Maintenance: Management Changes Would Improve Implementation of Reform Initiatives (NSIAD-99-63, June 25, 1999).

Department of Defense: Status of Financial Management Weaknesses and Actions Needed to Correct Continuing Challenges (T-AIMD/NSIAD-99-171, May 4, 1999).

Defense Inventory: Status of Inventory and Purchases and Their Relationship to Current Needs (NSIAD-99-60, Apr. 16, 1999).

Defense Inventory: DOD Could Improve Total Asset Visibility Initiative With Results Act Framework (NSIAD-99-40, Apr. 12, 1999).

High Risk Series: An Update (GAO/HR-99-1, Jan 1999).

Air Force Supply: Management Analysis of Activity Group's Financial Reports, Prices, and Cash Management (AIMD/NSIAD-98-118, June 8, 1998).

Defense Depot Maintenance: Use of Public-Private Partnering Arrangements (NSIAD-98-91, May 7, 1998).

Defense Inventory: Management of Surplus Usable Aircraft Parts Can Be Improved (NSIAD-98-7, Oct. 2, 1997).

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